

## **INTEGRATED CAPACITIVE MICROFLUIDIC SENSORS METHOD AND APPARATUS**

### **ABSTRACT OF THE DISCLOSURE**

A microfluidic device and method for capacitive sensing. The device includes a fluid channel including an inlet at a first end and an outlet at a second end, a cavity region coupled to the fluid channel, and a polymer based membrane coupled between the fluid channel and the cavity region. Additionally, the device includes a first capacitor electrode coupled to the membrane, a second capacitor electrode coupled to the cavity region and physically separated from the first capacitor electrode by at least the cavity region, and an electrical power source coupled between the first capacitor electrode and the second capacitor electrode and causing an electric field at least within the cavity region. The polymer based membrane includes a polymer.

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